NOTES.

On the Extension of the Distribution of the American Slipper-Limpet (*Crepidula fornicata*) in the English Coastal Waters. (*Read 13th November*, 1914.)—The introduction and early spread of the American Slipper-Limpet on the Essex coast since about the year 1880 has already been described by Orton,[1] and later by Murie.[2] It is now of interest to record the progress of the invasion of English waters by this animal.

I have been informed by Mr. W. R. Butterfield, Curator of the Hastings Museum, that a few specimens of *Crepidula* have been taken in the Hastings locality, chiefly on shells of the common whelk, *Buccinum undatum*, from about the year 1908 or 1909.[3] Now it is well known that the tidal streams of the English Channel meet and separate in the Hastings district, thus this region forms an excellent new centre of distribution for the further spread of the invading limpet by means of its free-swimming larvæ. So far, however, there appear to be only three additional localities in the English Channel where *Crepidula* is known to occur.

At the request of Mr. G. C. Robson of the British Museum, Miss Florence Jewell in May, 1913, kindly sent me a living specimen of *Crepidula fornicata*, which was obtained from the harbour at Emsworth in Hampshire during the same month. This specimen was the smallest of a chain of four individuals, the largest of which then measured about 1⅝ inches long. Subsequently fishermen have brought in to Miss Jewell on five separate occasions fourteen other specimens from the same district. In Sussex, at Selsey Bill and Shoreham, Mr. Ronald Winckworth of Brighton has been good enough to inform me that he has found a fresh specimen in the former locality in December, 1911, and a living one in the latter, about March, 1912, at low-water mark, discoveries which no doubt indicate the presence of greater numbers of this animal in the neighbouring deeper waters. Thus there can be no doubt that the slipper-limpet is gradually extending its distribution westwards down the English Channel. It has undoubtedly effected a highly successful invasion of the English coastal waters,[4] for it is now to be found at various places between Mersea Island on the coast of Essex—in which region it was first introduced—to Emsworth in Hampshire. *Crepidula* therefore furnishes an excellent example of the efficacy of a free-swimming

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[1] J. H. Orton, "On the Occurrence of Protandric Hermaphroditism in *Crepidula fornicata*": Proc. Roy. Soc., vol. lxxxi, B, pp. 468–84, text-figs., 1909.

[2] J. Murie, "'Slipper Limpet' or 'Boat Shell', *Crepidula fornicata*: its Introduction and Influence on Kent and Essex Oyster Beds": Zoologist, No. 845, November 15, 1911, pp. 401–15, pls. vi, vii.

[3] See also W. Ruskin Butterfield, Handbook to Collections in the Corporation Museum, Hastings, 1911, p. 36.

[4] I have obtained this year from the Essex coast chains of from two to nineteen individuals, whereas in 1909 the largest chain met with contained only thirteen individuals. This fact indicates that *Crepidula* had not attained a maximum of virility in 1909, and has since continued to extend its influence in these excellent feeding-grounds. Whether it has yet reached its maximum of development is still doubtful.

larva in extending the domain of a sea-dwelling animal, for, so far as I have been able to learn, no adults of this animal have been introduced into the coastal waters of either Sussex or Hampshire.

J. H. Orton.

Note on the Land and Freshwater Shells of Texel and Terschelling. (*Read 13th November*, 1914.)—When paying a visit to these islands in August, 1913, the following species of land and freshwater Mollusca were collected.

Texel seemed fairly productive of shells, twenty species being found there. I was interested to find a *Vertigo*, none of which genus had appeared in my exploration of Friesland some years ago.

Helicella cantiana, too, turned up unexpectedly, and could not, I think, have been imported, as I found it at Koog on the west side of the island, far from any harbour or place where boats land. Whether imported or not, it seems to have established itself in some numbers.

I also visited the intermediate island, Vlieland, but found no signs of Mollusca there.

Texel.

Helix nemoralis, L.
Pyramidula rotundata (Müll.).
Theba cantiana (Mont.), var. *cantianiformis*, Ancey.
Hygromia hispida (L.), var. *hispidosa*, Mouss.
Cochlicopa lubrica (Müll.).
Vallonia excentrica, Sterki.
Vertigo antivertigo (Drap.).
Limnæa pereger (Müll.).
var. *maritima*, Jeff.
var. *balthica*.
var. *acuminata*, Jeff.
var. *ovata*, Drap.
Limnæa palustris (Müll.).
var. *lacunosa* (Zgl.).
Limnæa truncatula (Müll.).
Planorbis umbilicatus, Müll.
P. spirorbis (L.).
P. contortus (L.).
P. albus, Müll.
Succinea elegans, Risso, var. *longiscata*, Morelet.
Sphærium corneum (L.).
Paludestrina ventrosa (Mont.).
Pisidium nitidum, Jenyns.
P. obtusale, Pfr.
P. subtruncatum, Malm.

Terschelling.

Limnæa pereger (Müll.).
L. palustris (Müll.).
Planorbis spirorbis (L.).
Sphærium corneum (L.).
Physa fontinalis (L.).
Succinea putris (L.).
Paludestrina stagnalis, Bast.
Pisidium casertanum, Poli.

F. H. Sikes.